Remarks

Claims 3 and 21-32 were pending in the subject application. By this Amendment, claims 3 and 21-32 have been cancelled, and new claims 33-49 have been added. The undersigned avers that no new matter is introduced by this amendment. Entry and consideration of the amendments presented herein is respectfully requested. Accordingly, claims 33-49 are currently before the Examiner for consideration. Favorable consideration of the pending claims is respectfully requested.

As an initial matter, the applicants have canceled claims 3 and 21-32 and added claims 33-49. New claims 33-36 and 37-49 represent, respectively, product claims and process claims for making and/or using the product, within the meaning of MPEP § 821.04. New claims 37-49 are method claims that directly or indirectly depend from claim 33. Therefore, pursuant to MPEP § 821.04, upon an indication of an allowable product claim, the applicants respectfully request that claims 37-49 be rejoined and examined in the subject application.

The examiner has maintained the objection to the specification as failing to provide proper antecedent basis for the claimed subject matter. The applicants respectfully submit that the subject specification does provide antecedent support for immunogenic compositions comprising RSV protein antigens. However, as indicated above, the applicants have cancelled claims 3 and 21-32 and added claims 33-49 in order to expedite prosecution of the subject application. New claim 33 recites an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the one or more plasmid DNA encode an M2 RSV antigen and at least three RSV antigens selected from the group consisting of F, G, M, SH, NS1, NS2, N, and P. Claims 34-49 directly or indirectly depend from claim 33.

Support for claim 33 can be found, for example, at page 3, lines 9-10, lines 12-14, lines 17-20, lines 26-29; page 6, lines 21-29; page 7, lines 3-16; and the claims as originally filed. Support for claims 34, 42, and 47 can be found, for example, at page 3, lines 14-15, page 6, lines 24-28, and the claims as originally filed. Support for claims 35, 43, and 48 can be found, for example, at page 4, lines 3-7, and the claims as originally filed. Support for claims 36, 44, and 46 can be found, for example, at page 3, lines 9-10, lines 17-20; page 4, lines 5-7, page 6, lines 22-23; and page 7, lines 3-16; and the claims as originally filed. Support for claim 37 can be found, for example, at page 3,

lines 21-26; page 4, lines 8-9; page 9, lines 15-22; and claims 13-17 as originally filed. Support for claim 38 can be found, for example, at page 3, lines 15-17, lines 23-24, and the claims as originally filed. Support for claim 39 can be found, for example, at page 3, lines 25-26; page 8, lines 20-21; and the claims as originally filed. Support for claims 40 and 41 can be found, for example, at page 8, lines 13-21, and the claims as originally filed. Support for claims 45 and 49 can be found, for example, at page 4, lines 5-7, page 9, lines 1-13, and claims 18-20 as originally filed. The applicants respectfully submit that support for claims 33-49 can be found throughout the specification as originally filed. Accordingly, reconsideration and withdrawal of the objection to the specification is respectfully requested.

Claims 3 and 21-32 are rejected under 35 U.S.C. §112, second paragraph, as indefinite. The applicants respectfully submit that the metes and bounds of the claimed subject matter is sufficiently clear. However, as indicated above, the applicants have cancelled claims 3 and 21-32, rendering this rejection moot. Claims 33-49 have been added. New claim 33 recites an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the one or more plasmid DNA encode an M2 RSV antigen and at least three RSV antigens selected from the group consisting of F, G, M, SH, NS1, NS2, N, and P. Thus, the composition comprises one or more plasmid DNA, which is coacervated with chitosan. The one or more plasmid DNA encode the recited RSV antigens. Thus, it is clear from the claim that only the one or more plasmid DNA and chitosan coacervate are required, and the recited RSV antigens are polypeptides that are produced upon the expression of the encoding DNA. Claims 34-49 directly or indirectly depend from claim 33. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 23 and 26-32 are rejected under 35 U.S.C. §112, first paragraph, as lacking sufficient written description. The applicants respectfully submit that claims 23 and 26-32 do not represent new matter. However, as indicated above, the applicants have canceled claims 23 and 26-32 rendering this rejection moot. Claims 33-49 have been added. New claim 33 recites an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the one or more plasmid DNA encode an M2 RSV antigen and at least three RSV antigens selected from the group consisting of F, G, M, SH, NS1, NS2, N, and P. Claims 34-49 directly or

indirectly depend from claim 33. Written support for each of claims 33-49 is set forth in the preceding paragraph in reply to the objection to the specification, the substance of which is incorporated herein by reference. The applicants respectfully submit that support for claims 33-49 can be found throughout the specification as originally filed. One of ordinary skill in the art would reasonably conclude that the inventors were in possession of the claimed invention at the time of filing. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §112, first paragraph, is respectfully requested.

Claims 3, 24, and 25 are rejected under 35 U.S.C. §102(b) as being anticipated by Murphy *et al.* (U.S. Patent No. 5,882,651). The applicants respectfully submit that the Murphy et al. patent does not teach or suggest the immunogenic composition of the claimed invention. However, by this Amendment, the applicants have cancelled claims 3, 24, and 25, rendering this rejection moot. New claim 33 recites an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the one or more plasmid DNA encode an M2 RSV antigen and at least three RSV antigens selected from the group consisting of F, G, M, SH, NS1, NS2, N, and P. New claims 34-49 directly or indirectly depend therefrom. The Murphy *et al.* patent does not teach or suggest the immunogenic composition presently claimed.

The Murphy *et al.* patent describes compositions containing attenuated RSV particles including various RSV proteins. However, the Murphy *et al.* patent does not teach or suggest an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the plasmid DNA encode the recited RSV antigens. To be anticipatory under 35 U.S.C. §102, a reference must disclose every element of the applicants' claimed invention. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) is respectfully requested.

Claims 3 and 21-24 are rejected under 35 U.S.C. §103(a) as being obvious over Collins *et al.* (U.S. Patent 6,264,957) in view of Connors (*J. Virol*, 1991, 65(3):1634-1637). The applicants respectfully submit that the cited references do not teach or suggest the subject invention. However, as indicated above, the applicants canceled claims 3 and 21-24, rendering this rejection moot. The cited references do not teach or suggest the immunogenic composition of the claimed invention.

The primary reference, the Collins *et al.* patent, describes infectious RSV particles made using plasmid vectors. As acknowledged in the Office Action, particles comprising at least three

antigens selected from the F, G, and N RSV antigens are not described. Moreover, the Collins *et al.* patent does not teach or suggest coacervating chitosan with RSV antigen encoded plasmid DNA, as recited in claim 33. The secondary reference, Connors *et al.* pertains to the use of vaccinia virus recombinants to express polynucleotides encoding the RSV F or G glycoprotein, and does not cure the defects of the primary reference. Therefore, the applicants respectfully submit that the Collins *et al.* patent and Connors *et al.* publication, taken alone or together, do not teach or suggestion the immunogenic composition of the subject invention.

Claims 3 and 24 are rejected under 35 U.S.C. §103(a) as being obvious over Conners *et al.* Claims 21-23 are rejected under 35 U.S.C. §103(a) as being obvious over Conners *et al.* in view of Cates *et al.* (WO 98/02457). Claim 25 is rejected under 35 U.S.C. §103(a) as being obvious over Conners *et al.* and further in view of Domachowske *et al.* (*Clin. Microbiol. Rev.*, 1999, 12(2):298-309). Claims 3, 24-27, 29, 30, and 32 are also rejected under 35 U.S.C. §103(a) as being obvious over Conners *et al.* and further in view of Li *et al.* (*J. Exp. Med.*, 1998, 188(4):681-688) and Li *et al.* (*Virology*, 2000, 269:54-65) and in light of Montgomery *et al.* (*Pharmacol. Ther.*, 1997, 74(2):195-205). Claims 28 and 31 are rejected under 35 U.S.C. §103(a) as being obvious over Conners *et al.* in view of the Li *et al.* references, and further in view of Leong *et al.* (*J. Controlled Release*, 1998, 53:183-193). The applicants respectfully submit that the cited references do not teach or suggest the immunogenic composition of the invention as presently claimed.

The Conners *et al.* publication is relied upon as the primary reference in each of the foregoing rejections under 35 U.S.C. §103(a). As indicated above, the Conners *et al.* publication describes experiments evaluating whether recombinant vaccinia viruses separately encoding RSV proteins are able to induce resistance to RSV challenge. Claim 33 of the subject application recites an immunogenic composition comprising one or more plasmid DNA coacervated with chitosan, wherein the one or more plasmid DNA encode an M2 RSV antigen and at least three RSV antigens selected from the group consisting of F, G, M, SH, NS1, NS2, N, and P. The Conners *et al.* patent does not teach or suggest producing a coacervate of chitosan and one or more plasmid DNA encoding the recited RSV antigens. The secondary references Cates *et al.*, Domachowske *et al.*, Li *et al.* (1998), Li *et al.* (2000), and Montgomery *et al.* do not teach or suggest coacervating one or more RSV antigen encoded plasmid DNA with chitosan.

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The Leong *et al.* publication describes coacervating DNA with chitosan to form DNA-chitosan nanospheres capable of expressing β-gal in the muscle of BALB/c mice. The Leong *et al.* publication does not teach or suggest coacervating chitosan with plasmid DNA encoding the recited RSV antigens in order to formulate an immunogenic composition. No motivation is provided by the cited reference to modify the DNA-chitosan nanospheres of the Leong *et al.* publication to arrive at the immunogenic compositions of the present invention.

As the Examiner is aware, any rejection of a claim for obviousness must include a finding that one of ordinary skill in the art at the invention was made would have reasonably expected the claimed invention to work. *In re O'Farrell*, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988); *In re Dow Chem.*, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). An assertion of obviousness without the required suggestion or expectation of success in the prior art is tantamount to using the applicants' disclosure to reconstruct the prior art references to arrive at the subject invention. This was specifically recognized by the CCPA in *In re Sponnoble*, 56 CCPA 823, 160 USPQ 237, 243 (1969):

> The Court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is we must review the prior art without reading into that art appellant's teachings. *In re Murray*, 112 USPQ 364 (1959); *In re Sprock*, 133 USPQ 360 (1962). The issue, then, is whether the teachings of the prior art would, in and of themselves and without the benefits of appellant's disclosure, make the invention as a whole, obvious. *In re Leonor*, 158 USPQ 20 (1968). (Emphasis in original)

Here, it is only the applicants' disclosure that provides the teaching that coacervates of chitosan and plasmid DNA encoding several RSV antigens can be synthesized and delivered to a host's lung cells by an efficacious route (*e.g.*, by mucosal routes such as oral and intranasal), wherein the antigen-encoded DNA is expressed at sufficient levels within the host's cells to achieve immunogenicity, nevermind attenuation of pulmonary inflammation without inducing airway hyperreactivity. The applicants respectfully submit that the cited references would not impart any reasonable expectation of success to one of ordinary skill in the art. At most, based on the general guidance of the cited references, coacervation of plasmid DNA with chitosan for enhancement of gene delivery was an approach seeming to be a promising field of experimentation. However, the cited references do not contain a sufficient teaching of how to obtain the desired result---a sufficient

immune response. It is well settled that "obvious to try" is not the standard for obviousness under 35 U.S.C. §103. *Ex part Goldgaber*, 41 USPQ2d 1172, 1177 (B.P.A.I. 1996).

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing remarks and amendments to the claims, the applicants believe that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

The applicants invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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